

# PATENT ABSTRACTS OF JAPAN

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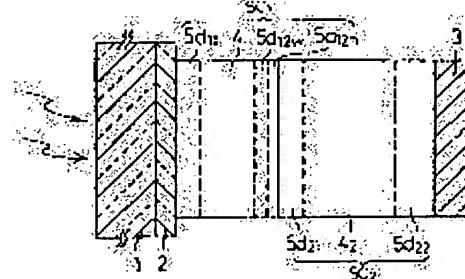
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## (54) PHOTOVOLATIC DEVICE

### (57)Abstract:

**PURPOSE:** To realize the reduction of light absorption in a boundary impurity layer and the improvement of boundary surface junction property, and increase photoelectric conversion efficiency, by arranging layers of wide band gap amorphous silicon alloy on the contact boundary surface of neighboring unit power elements so as to sandwich non-single crystal silicon.

**CONSTITUTION:** In the title photovoltaic device, a plurality of unit power elements SC whose main component is amorphous silicon are stuck. An impurity layer arranged on a contact boundary surface between the neighbouring unit power element SC1 and SC2 has a structure wherein a silicon layer 5d12n of conductivity type non-signal crystal is sandwiched by a conductivity type and an inverse conductivity type amorphous silicon alloy layers 5d12w and 5d21 of wide band gap whose optical forbidden band width is wider than that of the above-mentioned amorphous silicon. For example, on the contact boundary surface between a first unit element SC1 and a second unit element SC2, the following are arranged: two layers for the N-type impurity layers of the first unit power element SC1, which are composed of a first layer 5d12w of a-Si<sub>1-x</sub>N<sub>x</sub> and second layer 5d12n of a-Si or  $\mu$ -c-Si, and a P-type a-Si<sub>1-x</sub>C<sub>x</sub> for the impurity layer 5d21 of the second unit power element SC2.



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